Insitumain Pressure Pipe

City of Cedar City
25 February 2015

AWWA M28 General Framework

Non-structural repairs
- Repairs that arrest the deterioration process

Semi-structural repairs
- Interactive liners with the host pipe

Structural repairs
- Independent liners

LINER CHARACTERISTICS	NON-STRUCTURAL	SEMI-STRUCTURAL		FULLY STRUCTURAL
	CLASS I	CLASS II	CLASS III	CLASS IV
INTERNAL CORROSION BARRIER	YES	YES	YES	YES
BRIDGES HOLES/GAPS AT PIPE OPERATING PRESSURE	NO	YES	YES	YES
INHERENT RING STIFFNESS	NO (depends on adhesion)	NO (depends on adhesion)	YES*	YES*
LONG-TERM INDEPENDENT PRESSURE RATING ≥ PIPE OPERATING PRESSURE	NO	NO	NO	YES
SURVIVES "BURST" FAILURE OF HOST PIPE	NO	NO	NO	YES

CIPP in Potable Water Applications

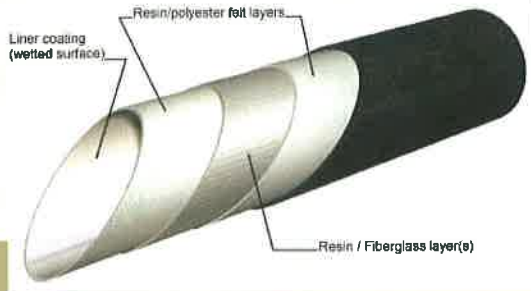
ANSI/NSF 61 Certification

- Lining products offered in potable water applications are to be third-party certified as complying with the requirements of ANSI/NSF Standard 61

NSF International

Class IV Fully-Structural CIPP

- Structurally independent of host pipe for internal pressure and external loading
- Addresses the following:
  - Severe deterioration
  - Corrosion
  - Pinholes
  - Joint separation
  - Joint leaks



Class IV Fully-Structural CIPP

- CIPP liner is fully structural and **independent** of host pipe.
- Diameter ranges: 6 – 48 inches.
- Jointless, continuous pipe lining
- Materials inhibit further corrosion or internal buildup.
- Over 300,000 ft. ranging from 6" to 60" since 1998

InsituMain™ ASTM 1599 Testing

Short-Time Hydraulic Failure Pressure of Plastic Pipe (aka Burst test)

Fully Unrestrained Liner Specimens

150 psi (1035 kPa) operating pressure:

- based on burst test results =

  800 - 1300 psi (5515 - 8960 kPa)
- Use 600 psi for design

Class IV - Fully Structural Liner

Diameter, In	Nominal Thickness, mm
6	5.5
8	6.0
10	6.5
12	7.5
14	8.0
16	8.5
18	9.0
20	10.5
22	11.0
24	13.0
27	13.5
30	15.0
33	16.0
36	17.5

CIPP Installation

- The liner is installed utilizing an inversion process
- Liner is formed under pressure utilizing hot water or steam cures
- Lengths of 500 ft. to 800 ft. typical, diameter dependent
- Robotically reinstate service corporations
- Hydrostatic pressure testing follows lining, as required

Pre-Installation – Cleaning

Pipeline is cleaned using drag scrapers, high pressure water jetting, pigs or other similar equipment, as needed

Pre-Installation – Cleaning

- Lines are flushed during and after the scraping process to remove debris
- Following cleaning, a swabbing pig or other drying system may be used to clear out any final debris and remove any remaining water

Torpedo Launcher

Installation Equipment

InsituMain Installation

Insitumain Installation

Insitumain Installation

Temporary Service and Pipeline